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EXAMINER

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/659,739	Applicant(s) BESER, NURETTIN BURCAK	
	Examiner Hoang-Vu A. Nguyen-Ba	Art Unit 2421	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 3, 2009 has been entered.
2. Claims 1-41 are pending. Claims 1, 9, 17, 22, 27, 30, 33, 37 and 41 are independent claims.

Response to Amendments

3. Per Applicant's request, Claims 2-16, 19-22, 24-27, 29-32 and 34-40 have been amended.

Response to Arguments

4. Applicant's arguments have been fully considered but they are not persuasive. The following is an examiner's response to Applicant's arguments.

Rejection under 35 U.S.C. § 102(e) based on MAHESH et al.

Claims 17-21

Applicant essentially submits that MAHESH et al. ("Mahesh") does not disclose or suggest *commanding at least one of the one or more cable modems to change its transmission characteristics based on the monitored quality, including changing from a first preamble length to a second different preamble length* because while Mahesh does disclose transmitting using a new profile and a different modulation profile which may define a number of parameters, such as modulation type and preamble (FIG. 4, 2:31-58 and 4:52-63), the cited sections of Mahesh do not disclose or suggest *changing from a first preamble length to a second length*. See Remarks p.14.

The Office respectfully disagrees with Applicant's assertion because the claimed feature of commanding the modems to change its transmission characteristics is considered to be anticipated by Mahesh's teachings of the headend that automatically and dynamically reconfigures a particular channel to utilize a different modulation profile that is better suited for transmitting data in light of the newly detected channel condition when the channel conditions have deteriorated (4:52-57). In Mahesh, the modulation profile is indicated to define a number of parameters to be used by a cable modem (CM) when communicating with the CMTS such as example, modulation type, preamble, etc. (2:54-58). As is well known in the art (see Quality-of-Service: a DOCSIS/PacketCable™ Perspective – Part I – “QoS”), DOCSIS is a platform for providing high-speed data access that necessitates maintaining a high degree of service quality (p. 1, 3rd paragraph). In the aforementioned QoS, the preamble length is **variable** and is used for synchronizing accurately the burst receiver phase-lock-loop (PLL) circuitry with the received data (p. 3, 2nd paragraph). Therefore, the claim requirement of *commanding at least one of the one or more cable modems to change its transmission characteristics ... including changing from a first preamble length to a second preamble length* is deemed inherent to the teachings of Mahesh. Without this requirement, which is the requirement of DOCSIS, Mahesh's devices (CMs and CMTSs) cannot effectively communicate with each other and cannot operate with other CMs and CMTSs currently in operation, which follow the DOCSIS standard.

Claims 18-21

These claims depend from Claim 17 and thus incorporate the rationale of the rejection of Claim 17.

Rejection under 35 U.S.C. § 103(a) based on MAHESH et al. and MILLET et al.

Claims 1-16 and 22-41

Applicant's arguments have been considered but they are moot in view of the new grounds of rejection.

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Claim Rejections – 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejection under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 17-21 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,891,858 to Mahesh et al. (“Mahesh”).

Claim 17

Mahesh discloses at least *a method of controlling transmission characteristics of cable modems, comprising:*

monitoring upstream transmission quality of one or more cable modems (see at least FIGs. 2-3); and

commanding at least one of the one or more cable modems to change its transmission characteristics based on the monitored quality, including changing from a first preamble length to a second different preamble length (see at least FIG. 4; it should be noted that in the conventional DOCSIS systems, a modulation profile may define a number of parameters to be used by a cable modem when communicating with the CMTS such as, modulation type, preamble – 2:31-58; e.g., the length of the preamble is deemed inherently set with the specified preamble – because without the set preamble the cable modem could not communicate with the CMTS with a different modulation profile – 4:52-63).

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Claim 18

The rejection of base claim 17 is incorporated. Mahesh further discloses *commanding the at least one of the one or more cable modems to transmit on a different upstream virtual channel based on the monitored quality* (see at least FIGs. 2-4 and discussion in Claim 1 related to virtual channels).

Claim 19

The rejection of base claim 17 is incorporated. Mahesh further discloses *where commanding at least one of the one or more modems to change its transmission characteristics comprises:*

commanding the at least one of the one or more modems to change its modulation based on the monitored quality (see at least FIGs. 2-4).

Claim 20

The rejections of the respective base claim and intervening claim are incorporated. Mahesh further discloses *commanding the at least one of the one or more modems to change from quadrature phase shift keying (QPSK) modulation to at least one of 16 quadrature amplitude modulation (16QAM), 8 QAM, 32QAM and 64QAM* (see at least FIG. 2, step 212).

Claim 21

The rejection of the respective base claim is incorporated. Mahesh further discloses *where the quality comprises at least one of bit-error-rate and signal-to-noise ration* (see at least FIGs. 2-4; e.g., SNR and FEC).

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7. The following is a quotation of the 35 U.S.C. § 103(a) which form the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-16 and 27-40 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,891,858 to Mahesh et al. ("Mahesh") in view of U.S. Patent No. 7,017,176 to Lee et al. ("Lee").

Claim 1

Mahesh discloses at least:

setting a modem to transmit on a first upstream channel on a first frequency using first transmission characteristics (see at least 5:20-28);

monitoring a quality of upstream transmission from the modem on the first upstream channel (see at least FIGs. 2-3).

Mahesh does not specifically disclose:

setting the modem to transmit on a second different upstream channel on a second different frequency using second transmission characteristics based on the monitored quality.

However, in an analogous art, Lee discloses an apparatus and method for transmitting upstream data over two or more upstream channels wherein if the second upstream channel differs from the first upstream channel (e.g., quality of service of the first upstream channel decreased), the cable modem is configured to transmit data over the second upstream channel (4:39-53) or if one of the multiple upstream channels of the cable modem becomes unable to transmit data, another upstream channel may take over transmission (see at least 6:40-44).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Lee in combination with Mahesh because the use of Lee would increase the reliability of data transmission in Mahesh (Lee; 6:35-44).

Claim 9

Mahesh discloses at least *a cable modem termination system* (see at least FIG. 5, device 804), *comprising:*

a memory to store instructions (see at least FIG. 5, component 857);

a communication interface (see at least FIG. 5, component 820) *to:*

receive transmissions comprising first transmission characteristics from a modem on a first upstream channel on a first frequency (see at least FIG. 5, function performed by devices 812, 814; 5:20-28), *and*

measure a quality of the received upstream transmissions from the modem (see at least FIGs. 2-3); *and*

a processor to execute the instructions in the memory (see at least FIG. 5, component 855) *to:*

monitor the measured quality of the received transmissions (see at least FIGs. 2-3).

send a message, via the communication interface, instructing the modem to dynamically reconfigure itself using second transmission characteristics based on the monitored quality (see at least 11:15-18).

Mahesh does not specifically disclose:

transmit on second different upstream channel on a second different frequency.

However, in an analogous art, Lee discloses an apparatus and method for transmitting upstream data over two or more upstream channels wherein if the second upstream channel differs from the first upstream channel (e.g., quality of service of the first upstream channel decreased), the cable modem is configured to transmit data over the second upstream channel (4:39-53) or if one of the multiple upstream channels of the cable modem becomes unable to transmit data, another upstream channel may take over transmission (see at least 6:40-44).

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It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Lee in combination with Mahesh because the use of Lee would increase the reliability of data transmission in Mahesh (Lee; 6:35-44).

Claim 27

Mahesh discloses *a method of changing transmission characteristics at a modem in a cable modem system, comprising:*

transmitting, by the modem, on a first channel on a first frequency (see at least 11:32-44);

receiving, by the modem, a command to select different upstream transmission characteristics (see at least FIG. 4 and 11:14-24);

selecting, by the modem, the different upstream transmission characteristics in accordance with the command (see at least FIG. 4 and 11:14-24).

Mahesh does not specifically disclose:

transmitting, by the modem, on a second different upstream channel on a second different frequency using different upstream transmission characteristics.

However, in an analogous art, Lee discloses an apparatus and method for transmitting upstream data over two or more upstream channels wherein if the second upstream channel differs from the first upstream channel (e.g., quality of service of the first upstream channel decreased), the cable modem is configured to transmit data over the second upstream channel (4:39-53) or if one of the multiple upstream channels of the cable modem becomes unable to transmit data, another upstream channel may take over transmission (see at least 6:40-44).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Lee in combination with Mahesh because the use of Lee would increase the reliability of data transmission in Mahesh (Lee; 6:35-44).

Claim 30

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Mahesh discloses at least *a cable modem* (see at least FIG. 1, device 120).

Although, Mahesh does not explicitly show:

a memory to store instructions;

a communication interface to receive an instruction to select different upstream transmission characteristics; and

a processing unit.

However, these devices are deemed inherent to Mahesh and well-known in the art (see FIG. 3 - Prior Art - of U.S. Patent No. 6,898,755 to Hou, same assignee with the instant application; it should be noted that Hou is not applied as a secondary art of record but is merely used to show that the claimed features are admitted by applicant to be known in the art). Without these components, the cable modems of Mahesh cannot change the modulation profile as shown in FIGs. 2-4 of Mahesh.

Mahesh further discloses the processing unit of the cable modem to:

transmit on a first upstream channel on a first frequency (see at least 11:32-44),

select the different upstream transmission characteristics in accordance with the instruction (see at least FIG. 4 and 11:14-24).

Mahesh does not specifically disclose:

initiate transmission on a second different upstream channel on a second different frequency using different upstream transmission characteristics.

However, in an analogous art, Lee discloses an apparatus and method for transmitting upstream data over two or more upstream channels wherein if the second upstream channel differs from the first upstream channel (e.g., quality of service of the first upstream channel decreased), the cable modem is configured to transmit data over the second upstream channel (4:39-53) or if one of the multiple upstream channels of the cable modem becomes unable to transmit data, another upstream channel may take over transmission (see at least 6:40-44).

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It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Lee in combination with Mahesh because the use of Lee would increase the reliability of data transmission in Mahesh (Lee; 6:35-44).

Claim 33

Mahesh discloses at least *a method of changing virtual upstream channels in a cable modem system, comprising:*

monitoring upstream signal qualities associated with one or more cable modems (see at least FIGs. 2-3).

Mahesh does not specifically disclose:

selectively switching at least one of the one or more cable modems between different frequencies based on the signal quality monitoring (see at least FIGs. 2-4).

Mahesh does not specifically disclose switching between *different virtual upstream channels*.

However, in an analogous art, Lee discloses an apparatus and method for transmitting upstream data over two or more upstream channels wherein if the second upstream channel differs from the first upstream channel (e.g., quality of service of the first upstream channel decreased), the cable modem is configured to transmit data over the second upstream channel (4:39-53) or if one of the multiple upstream channels of the cable modem becomes unable to transmit data, another upstream channel may take over transmission (see at least 6:40-44).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Lee in combination with Mahesh because the use of Lee would increase the reliability of data transmission in Mahesh (Lee; 6:35-44).

Claim 37

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Mahesh discloses at least *a cable modem termination system* (see at least FIG. 5, device 804), *comprising:*

a memory to store instructions (see at least FIG. 5, component 857);

a communication interface (see at least FIG. 5, component 820) *to:*

measure signal qualities of upstream transmissions associated with one or more cable modems (see at least FIGs. 2-3); *and*

a processor to execute the instructions in the memory (see at least FIG. 5, component 855) *to:*

monitor the measured quality of the received transmissions (see at least FIGs. 2-3).

Mahesh does not specifically disclose:

selectively command at least one of the one or more cable modems to switch between different virtual upstream channels based on the signal quality monitoring.

However, in an analogous art, Lee discloses an apparatus and method for transmitting upstream data over two or more upstream channels wherein if the second upstream channel differs from the first upstream channel (e.g., quality of service of the first upstream channel decreased), the cable modem is configured to transmit data over the second upstream channel (4:39-53) or if one of the multiple upstream channels of the cable modem becomes unable to transmit data, another upstream channel may take over transmission (see at least 6:40-44).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Lee in combination with Mahesh because the use of Lee would increase the reliability of data transmission in Mahesh (Lee; 6:35-44).

Claims 2 and 10

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The rejection of the respective base claim is incorporated. The Mahesh-Lee combination further discloses:

determining whether the quality of the modem upstream transmission is inadequate (see at least FIG. 2); and

setting the second transmission characteristics to more robust transmission characteristics based on the determination (Mahesh; see at least FIGs. 2-4; 11:32-44).

Claims 3 and 11

The rejection of the respective base claim is incorporated. The Mahesh-Lee combination further discloses:

determining whether the quality of the modem upstream transmissions is greater than a threshold (Mahesh; see at least FIG. 2); and

setting the second transmission characteristics to better performing transmission characteristics based on the determination (Mahesh; see at least FIGs. 2-4).

Claims 4 and 12

Rejections of the respective base claim and intervening claim are incorporated. The Mahesh-Lee combination further discloses *where the first transmission characteristics comprise one of 16 quadrature amplitude modulation (16QAM), 8QAM, 32QAM and 64 QAM, and the second transmission characteristics comprise quadrature phase shift keying (QPSK) modulation* (Mahesh; see at least FIGs. 2-4; 5:39-60).

Claims 5, 13, 35, 36, 39 and 40

Rejections of the respective base claim and intervening claim are incorporated. The Mahesh-Lee combination further discloses *where the first transmission characteristics comprise*

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quadrature phase shift keying (QPSK) modulation and the second transmission characteristics comprise at least one of 16 quadrature amplitude modulation (16QAM), 8QAM, 32QAM and 64QAM (Mahesh; see at least FIGs. 2-4; 5:39-60).

Claims 6 and 14

The rejection of the respective base claim is incorporated. The Mahesh-Lee combination does not specifically disclose *where the first upstream channel comprises a first time division of a first frequency* (Mahesh; see at least 14:33-42 and discussion related to modulation profiles in Claim 1).

Claims 7 and 15

Rejections of the respective base claim and intervening claim are incorporated. The Mahesh-Lee combination further discloses *where the second upstream channel comprises a second time division of the first frequency* (Mahesh; see at least 14:33-42 and discussion related to modulation profiles in Claim 1).

Claims 8 and 16

The rejection of the respective base claim is incorporated. The Mahesh-Lee combination further discloses *where the quality comprises at least one of bit-error-rate and signal-to-noise ration* (Mahesh; see at least FIGs. 2-4; e.g., SNR and FEC).

Claims 28, 31, 34 and 38

The rejection of the base claim is incorporated. The Mahesh-Lee combination further discloses *receiving a plurality of messages, each message describing different transmission characteristics* (Mahesh; see at least FIG. 4 and 11:14-24).

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Claims 29 and 32

The rejection of the base claim is incorporated. The Mahesh-Lee combination further discloses *where the command indicates the use of one of the plurality of messages for selecting different upstream transmission characteristics* (Mahesh; see at least FIG. 4 and 11:14-44).

9. Claims 22-26 and 41 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,891,858 to Mahesh et al. (“Mahesh”) in view of U.S. Patent No. 7,039,939 to Millet et al. (“Millet”).

Claim 22

Mahesh discloses at least *a cable modem termination system* (see at least FIG. 5, device 804), *comprising:*

a memory to store instructions (see at least FIG. 5, component 857); *and*

a processor to execute the executions in the memory (see at least FIG. 5, component 855).

Mahesh does not specifically disclose the remaining features of the claim.

However, in an analogous art, Millet discloses:

instruct at least one of the one or more cable modems to change its transmission characteristics, including changing from a first time division multiplexed timeslot size to a second different time division multiplexed timeslot size, when the monitored quality meets a specified criteria (see at least 11:17 - 12:35).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Millet in combination with Mahesh because the use of Millet would improve the quality of received upstream data at the headend and optimize the use of cable modem bandwidth in Mahesh.

Claim 23

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The rejection of base claim 17 is incorporated. The Mahesh-Millet combination further discloses *commanding the at least one of the one or more cable modems to transmit on a different upstream virtual channel when the monitored quality meets the specified criteria* (Mahesh; see at least FIGs. 2-4 and discussion in Claim 1 related to virtual channels).

Claim 24

The rejection of base claim 17 is incorporated. The Mahesh-Millet combination further discloses *where commanding at least one of the one or more modems to change its transmission characteristics comprises:*

commanding the at least one of the one or more modems to change its modulation when the monitored quality meets the specified criteria (Mahesh; see at least FIGs. 2-4).

Claim 25

The rejections of the respective base claim and intervening claim are incorporated. Mahesh-Millet further discloses *commanding the at least one of the one or more modems to change from quadrature phase shift keying (QPSK) modulation to at least one of 16 quadrature amplitude modulation (16QAM), 8 QAM, 32QAM and 64QAM* (Mahesh; see at least FIG. 2, step 212).

Claim 26

The rejection of the respective base claim is incorporated. The Mahesh-Millet combination further discloses *where the quality comprises at least one of bit-error-rate and signal-to-noise ration* (Mahesh; see at least FIGs. 2-4; e.g., SNR and FEC).

Claim 41

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Mahesh discloses at least *a system for controlling transmission characteristics of a cable modem* (see at least FIG. 1), *comprising:*

means for sending an upstream channel descriptor to one or more cable modems (see at least 11:32-44);

means for monitoring upstream transmission quality of the one or more cable modems (see at least FIGs. 2-4).

Mahesh does not specifically disclose the remaining features of the claim.

However, in an analogous art, Millet discloses:

means for commanding at least one of the one or more cable modems to change its transmission characteristics, including changing from a first data block size to a second different data block size, based on the sent upstream channel descriptor and the monitored quality (see at least 11:17 - 12:35).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Millet in combination with Mahesh because the use of Millet would improve the quality of received upstream data at the headend and optimize the use of cable modem bandwidth in Mahesh.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

11. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to PTO New Central Fax number:

(571) 273-8300, (for Technology Center 2400 only)

Hand deliveries must be made to Customer Service Window,

Randolph Building, 401 Dulany Street, Alexandria, VA 22314.

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12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoang-Vu “Antony” Nguyen-Ba whose telephone number is (571) 272-3701. The examiner can normally be reached on Monday-Friday from 9:00 am to 5:30 pm.

If attempts to reach the examiner are unsuccessful, the examiner’s supervisor, John Miller can be reached at (571) 272-7353.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2400 Group receptionist (571) 272-2400.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

/Hoang-Vu Antony Nguyen-Ba/

Primary Examiner, Art Unit 2421

May 15, 2009

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